

THE
BOOK OF ORNAMENTAL ALPHABETS,
Ancient and Medieval.
FROM THE EIGHTH CENTURY.
WITH NUMERALS,
INCLUDING
Gothic; Church Text, Large and Small; German Arabesque; Initials for Illumination,
MONOGRAMS, CROSSES, &c.,
PROCESSED, SEPARATED, CLEANED & SIMPLIFIED.

The Book Of Ornamental Alphabets User Manual

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Introduction

This document presents a description and a set of instructions for using the associated ornamental symbols.

This collection is derived from the excellent work published by Mr. Delamotte:

Title: The Book of Ornamental Alphabets, Ancient and Medieval, from the Eighth Century With Numerals, including Gothic; Church Text, Large and Small; German Arabesque; Initials for Illumination, Monograms, Crosses, &c.

Author: F. Delamotte

Purpose

The purpose of this project is to convert the images of Mr. Delamotte's work to a more usable form. The converted images allow the easy incorporation of the symbols into user created documents. Little or no skill in image processing is needed by the user.

Both Gimp and Image-Magick were used in processing these images. However, both Gimp and Image-Magick have a significant learning curve. As such, many users would be discouraged from using these images for their own creations.

The purpose of this document is to describe the project details as well as provide a limited set of instructions for the unskilled to use Gimp and Image-Magick in order to make simple changes for their own documents.

Uses

Uses include:

- Document ornamentation
 - Make the leading letter of a chapter/paragraph in the form of an ornamental letter. Such use is frequent in manuscripts and church documents from the middle ages.
- Names, titles & logos
 - Personalize notes, cards and letters with names assembled from the individual letters
 - For those set who have no lower case letters,
 - One option is to use "small caps". The upper case letters are imported and scaled to 50% to 66% of the upper case vertical size to "appear" like lower case letters.
 - Another option, is of course, use one of the lower case sets, changing the color of the set as desired to match the upper case letters.
- Individual full words and proper names can be assembled
 - It's possible, but tedious to assemble a full text of such letters. However, a shell script

or program can be made to automate the process. An example of such a program/script is not included here.

Description

The original electronic book consists of an HTML page referencing a set of JPEG images. Each page was a single JPEG image with all the symbols of the set within the image. The original JPEG images were scanned from a physical book and were in the scanned color with all the blemishes that were on the book pages.

In this set, for each original image, a subdirectory was created to hold the individual letter images and descriptive documents. The original image was cleaned then broken up into individual letter images. Each individual letter image was touched up as desired to improve the appearance of the image. In addition, a README file is included to describe the technical details of the images, details such as dimensions (in pixels), color and which images were newly created. Further, a spreadsheet file is included for those who wish to precisely calculate positioning of the letters, when assembling a composite of several letters.

For each original set image, the cleaning process attempted to clean up the "stray pixels", to repair blemishes, complete "broken" lines and adjust fill. The scanning process left a number of artifacts, beyond original book blemishes, which were addressed to a limited degree. The amount of touch up work varies. Some images were hardly touched, others had significant liberties taken. Much of the liberty taken was due to the scanning process including anti-aliasing. Anti-aliasing makes the scanned image appear "better" at a distance. However, for later processing and use the anti-alias pixels are a burden to deal with. See Appendix I: Symbol Sets for a list of the sets, illustrations and subdirectory/folder names.

Most of the set have either upper or lower case only. Only two set have both letter cases. Only one set has upper case letters, lower case letters and numbers. See Appendix II: Symbol Set by Case for a concise list of the contents of each set.

Further, many sets were "missing" one or more modern characters. The letter "J" is frequently missing in the original images. In the cases where a symbol set wasn't highly elaborate and only a few letters were missing, the missing modern characters were synthesized using pieces of characters from the original set. Some of these synthesized symbols appear to be reasonable, and a few are rather ugly. The readme file in each subdirectory/folder indicates which symbols were synthesized. Some incomplete sets have no synthesized symbols due to the number or complexity of the symbols in the set. See Appendix III: Concise List of Synthesized Symbols and the appropriate readme file.

In addition, two sets have symbols which are not recognized as associated with modern symbols. The sets: 10th Century - British Museum, illustration: illo017.jpg (subdirectory/folder 06-10th_Century-British_Museum-illo017) and 14th Century - British Museum, illustration: illo037.jpg

(subdirectory/folder: 16-14th_Century-British_Museum-illo037/) both have unknown symbols. The unknown symbols were included in the breakout of the set to individual images.

Each set has several files of descriptive material with it. First, there is a README file (in Unix format) which describes in detail what is in the set. Second there are two files (odt and pdf) of the symbol dimensions. The data in these files can be used to calculate the positions of letters when assembling the symbols into composite word/name images. Be careful, many letters have ascenders, descenders or flourishes which make calculating a position in a composite image difficult.

Finally, four "new" sets were developed from the original sets. These four sets have a full U. S. ASCII set of upper case letters, lower case letters, numbers and punctuation. To create these sets, original sets were either augmented from other sets or symbols (particularly punctuation) were synthesized. These set are not fonts as used by a word processor. They are collections of images (png files) which can be assembled into words, phrases and so on. They are still images and must be imported as such.

The four new set are:

- 96-12th_Century-Bodleian_Library/
 - This set is a version of: "11-12th_Century-Bodleian_Library-illo027"
- 97-15th_Century-illo097/
 - This set is a version of: "46-15th_Century-illo097"
- 98-16th_Century-Albert_Durers_Prayer_Book/
 - This set is a version of: "32-16th_Century-Albert_Durers_Prayer_Book_UC-illo069" and "33-16th_Century-Albert_Durers_Prayer_Book_LC-illo071"
- 99-16th_Century-French_Letters_Numerals/
 - This set is a version of: "38-16th_Century-French_Letters_Numerals-illo081"

All four of the new sets have additional features, not included with the original sets. These features include:

- An original resolution (72ppi) set where the white background pixels have been removed.
 - These images are in the "NOBG" subdirectory/folder

Three of the four set have additional high resolution versions.

- The high resolution versions were both increased in resolution to 300ppi and scaled up by four. The additions include
 - A high resolution (300ppi) set, with white background pixels.
 - In the "300PPI.WBG" subdirectory/folder.
 - A high resolution (300ppi) set, with no background pixels.

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- In the "300PPI.NBG" subdirectory/folder.

The presence or absence of background pixels is discussed in Background color: On-screen versus printed documents.


See Appendix IV: U. S. ASCII Sets and the appropriate readme file for details.

Examples


The following examples show how to incorporate the images into a word processor document.

Ornamental first letter

 was brillig and the slithy toves did gyre and gimbal in the wabe.

ll mimsy were the borogroves and the mome raths outgrabe.

The above character is from the Initials, illustration illo093 (44-Initials-illo093/) set. The basic color of the image is red, RGB: 209, 068 044 or 0x1442c. However, when averaged with the white, the eye sees a different color. Further, the anti-aliasing pixels change the perceived color. To match document text and image color, some experimentation is needed. Remember, the monitor and the printer present colors a little differently.

Note on LibreOffice (v6.1.4), using ornamental first letters in headings is possible. However, the automatic table of contents (and presumably indexing) doesn't put a copy of the image in the generated table of contents. For example: using "rnamental first letter" as a heading (via style designation), will result in "rnamental first letter" in the table of contents!

nternet rchive

The above characters are from the synthesized version of the 16th Century - French Letters & Numerals, illustration: illo081.jpg (99-16th_Century-French_Letters_Numerals-illo081) set. The basic color of the image is red, RGB: 209, 055, 031 or 0xd137f. The colors here match well. The symbols were touched up to have a pure single color and the anti-aliasing pixels were removed. Thus, on screen, there is a good match between the image symbols (the I and the A) and the lower case text. A printer

should match well also. The "blocky" appearance of the text is due to the low resolution (72 x 72 ppi) of the original.

Names, titles & logos

An example logo for Internet Archive:



The characters in the above logo are from the 12th Century Mazarin Bible, illustration: illo021.jpg (08-12th_Century-Mazarin-illo021). The basic color of the image is red, RGB: 234, 125, 106 or 0xea7d6a. However, when averaged with the white, the eye sees a different color. Further, the anti-aliasing pixels change the perceived color. To match document text and image color, some experimentation is needed. Remember, the monitor and the printer present colors a little differently. The symbols were touched up to have clean lines and the anti-aliasing pixels were adjusted for clarity.

The logo is inside a word processor "frame" which allows for various additional embellishments. In the above case a wide border is included. The characters were scaled to the desired sizes then inserted into a frame.

The first symbol (I) is positioned as follows:

1. Anchor: to paragraph checked
2. Position, Horizontal: "Left" to "Paragraph text area"
3. Position, Vertical: "Top" to "paragraph text area"

Which puts the symbol in the upper left of the text area inside the frame.

The second symbol (A) is positioned as follows:

4. Anchor: to paragraph checked
5. Position, Horizontal: From Left by 0.58 to paragraph text area
 1. 0.58 is the width of the I symbol
6. Position, Vertical: "Top" to "Paragraph text area"

Which puts the symbol next to the I symbol inside the frame.

The frame is then adjusted to surround the symbols as desired. Experimentation is needed to obtain the desired effect.

The various images in this set have significant differences in size to primarily to flourishes. With such images the user must customize the dimension and positioning in order to obtain the look desired. For this style of character, an image processing program is a better way to assemble the desired images. The completely assembled image should be exported to a final image file and the final image imported into the word processor.

There is a "GOTCHA" in this having to do with white background pixels, see Background color: On-screen versus printed documents for a description of a potential problem.

Individual word and proper name assembly

Proper name: "F. Delamotte:"



The above characters are from the 15th Century, illustration: illo097.jpg (46-15th_Century-illo097) set. The set is a gray scale set, not a color (RGB) set. The basic "color" of the image is black/gray: RGB: 033, 033, 033, or 0x212121 . The normal text in a word processor is black, close enough to the image color to match well. The symbols were touched up to have clean lines and the anti-aliasing pixels were adjusted for clarity. Thus, on screen, there is a good match between the image symbols and the document text. A printer should match well also.

However, the assembly of the name is laborious. The steps are (in LibreOffice);

1. Starting with the first symbol, the symbol must be imported as an image.
2. The imported image scaled to the desired size (here 1" high or 72 point) and set the image to be anchored as "a character".
 - Be careful when scaling that both the vertical and horizontal dimensions are scaled. In LibreOffice, check the "Keep ratio" box.
 - Note: setting the image to a "character" is so that the characters will naturally follow each other and the user doesn't need to carefully craft the distance between characters and the page/margins/paragraphs.
3. Move the image to start of the line of text line of text. It should move like any other character, cut/copy/paste should work as other characters.
4. Save frequently!
5. Import the next symbol.

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1. GOTCHA: this version of LibreOffice (6.1.4) brings imports images as pictures, anchoring the image to the paragraph, assuming that the user will specify the location. When the image is imported it is automatically placed as an image, in the center of the screen, meaning out of place in the line being assembled.
6. Scale the image and designate it a character
7. Move (cut and paste) the image to where it is desired to be in the line of text.
8. Repeat 5 though 7 for the remaining image/characters.
 1. Image/characters already imported once can be copied and pasted when additional copies are needed.

Note, in this example the period (after the "F" image) is actually a text period and not an image period. Thus image/characters and "regular" characters can be intermixed. The letters were set to 1" vertical height equivalent to 72 point text, thus the period need to be 72 point text to match. The size match is not exact. The image/characters have a two point white background perimeter, which doesn't show on a white background.

Tips and Tricks

For Image Magick

The following is a set of detailed tips to help in getting better use out of the ornamental alphabet symbols provided. This is not an Image-Magick tutorial, despite the detail. The user is expected to be able to use the command line, read and understand the Image-Magick documentation and diligent enough to labor at the effort. Image processing is not cook-book simple for the unskilled. Certainly, no simple set of instructions can tell everyone exactly how to do exactly what they want. YMMV.

The following assumes that Image-Magick has been properly installed and is functioning on the user's computer. The following procedures have been used with Image-Magick version 6.9.4.

Check the installation by opening a command shell and typing:

```
convert -version
```

The result should look something like:

```
Version: ImageMagick 6.9.4-9 Q16 x86_64 2016-06-17
http://www.imagemagick.org
Copyright: Copyright (C) 1999-2016 ImageMagick Studio LLC
License: http://www.imagemagick.org/script/license.php
Features: Cipher DPC
Delegates (built-in): bzlib cairo djvu fftw fontconfig freetype jng jp2 jpeg
lcms lzma openexr pangocairo png rsvg tiff wmf x xml zlib
```

If something quite different appears, or the screen indicates that the command is not found, then ImageMagick isn't installed correctly. Fix the installation problem before continuing.

The instructions below have been used and tested. The commands indicated have variations not listed here, see the Image Magick documentation and web site for more information on how to use the commands. Also, there may be better, more efficient or easier way to do what is shown, if there are I don't know them. The following have worked on my Linux box, with the software version listed. It should work on other distributions and version close to the versions indicated. If your software version is significantly different, additional research and experimentation may be necessary.

The instructions here use Linux terminology, see Appendix V: Linux and Windows for the corresponding Windows equivalent. This format is less burdensome than trying to include both sets of terms together.

Changing the Symbol Color

Changing color if one of the letters is simple in concept. However, in practice changing an image color can be laborious.

Instructions

There are two situations with these image sets. The first and easiest is to use one of the synthesized sets (96... through 99...). Most of the labor has been done. The images are of a single pure color and there are no anti-alias pixels. The procedure for a symbol from one of the synthesized sets is as follows:

1. Copy the desired symbol PNG files to the working directory.
2. For each symbol of a set, obtain and note the symbol color from the readme file.
 1. Each set has different colors. Thus if symbols from multiple sets are being used, the color of each set must be noted and used appropriately.
 2. 12th Century - Bodleian Library: illustration: illo027.jpg
 1. Directory: 96-12th_Century-Bodleian_Library-illo027/
 2. Color Space: RGB: 084, 125, 051 or 0x547d33 (a sort of light green)
 3. Ornamental Alphabet: 15th Century
 1. Directory: 97-15th_Century-illo097
 2. Color Space: RGB: 033, 033, 033, or 0x212121 (deep gray)
 4. Ornamental Alphabet: 16th Century - Albert Durer's Prayer Book,
 1. Directory: 98-16th_Century-Albert_Durers_Prayer_Book-combined/
 2. Color Space: RGB: 190, 049, 029 or 0xbe311d (a sort of reddish orange)
 5. 16th Century - French Letters & Numerals, illustration: illo081.jpg
 1. 99-16th_Century-French_Letters_Numerals-illo081/
 2. Color Space: RGB: 209, 055, 031 or 0xd137f (a sort of reddish orange)
3. For each symbol type the following command (spelling counts):

```
convert <symbol_file_name.png> -fuzz <FUZZ>% -fill 'rgb(rrr,ggg,bbb)'  
-quality 100 <output_file_name.png>
```

- The <symbol_file_name.png> is the name of the symbol which is the source image (aka the input file, including path name if needed). This file won't be changed. If the original is to be changed, then use "mogrify" in place of "convert" and omit the output filename.
- The "-fuzz <FUZZ>%" is an estimate of how close or far, in color, the pixels are to be changed.

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- Change the word "<FUZZ>" to a number between 0 and 100 (inclusive).
- The '%' is necessary, with no space between the number and the '%' character.
- For the synthesized sets this can be 0% (or leave out -fuzz <FUZZ>% altogether)
 - The colors are pure and exact.
- The "-fill 'rgb(rrr,ggg,bbb)'" specifies the desired new color.
 - The nomenclature is for an RGB color.
 - The "rrr" is the red specification, 0 to 255 inclusive.
 - The "ggg" is the green specification, 0 to 255 inclusive.
 - The "bbb" is the blue specification, 0 to 255 inclusive.
 - An alternative specification is "-fill '#rrggb'" with the "rrggb" in hexadecimal.
- The "-quality 100" sets the compression and quality of the output file. The number 100 is the best quality, and largest file size. Lower numbers are for more compression and increasing loss of image quality.
- The <output_file_name.png> is simply the output filename. PNG is used here, but not required. Any file recognized by both Image Magick and the word process or will do.

The procedure for a symbol from one of the original sets (with anti-alias pixels) is as follows:

1. Copy the desired symbol PNG files to the working directory.
2. For each symbol of a set, obtain and note the symbol color from the readme file.
 1. The set have different colors. Thus if symbols from multiple sets are being used, the color of each set must be noted and used appropriately.
3. For each symbol type the following command:

```
convert <symbol_file_name.png> -fuzz FUZZ% -fill 'rgb(rrr,ggg,bbb)' -quality 100 <output_file_name.png>
```

- The <symbol_file_name.png> is the name of the symbol which is the source image (aka the input file, including path name if needed). This file won't be changed. If the original is to be changed, then use "mogrify" in place of "convert" and omit the output filename.
- The "-fuzz FUZZ%" is an estimate of how close or far, in color, the pixels are to be changed.
 - Change the word "FUZZ" to a number between 0 and 100 (inclusive).
 - The '%' is necessary, with no space between the number and the '%'.
 - The colors in the original sets, with anti-aliasing, are a mixture of colors.
 - Individual experimentation is needed.
- The "-fill 'rgb(rrr,ggg,bbb)'" specifies the desired new color.

- The nomenclature is for an RGB color.
 - The "rrr" is the red specification, 0 to 255 inclusive.
 - The "ggg" is the green specification, 0 to 255 inclusive.
 - The "bbb" is the blue specification, 0 to 255 inclusive.
 - An alternative specification is "-fill '#rrggb'" with the "rrggb" in hexadecimal
 - The "-quality 100" sets the compression and quality of the output file. The number 100 is the best quality, and largest file size. Lower numbers are for more compression and increasing loss of image quality.
 - The <output_file_name.png> is simply the output filename. PNG is used here, but not required. Any file recognized by both Image Magick and the word process or will do.
4. Repeat for each of the colors in the symbol (look at the output symbol).
 1. Remember adjust the file names, the old output file must be the new input file!
 2. Yes, this is VERY tedious, what are the other colors (of the anti-alias pixels) and what should they be changed to? Lots of work.
 3. Now you know why the synthesized symbol sets were created!

Examples

Example 1

Using file illo027-a_lc.png from the synthesized 96-12th_Century-Bodleian_Library-illo027 set:

```
convert illo027-a_lc.png -fuzz 0% -fill red -opaque 'rgb(084,125,051)'  
-quality 100 illo027-a_lc-to_red00.png
```

This example starts with a lower case 'a' which is green and results in a new file, illo027-a_lc-to_red00.png, which is red. This is quick, clean and easy for the synthesized sets.

Example 2

Using file illo009-A_uc.png from the original 02-08th_Century-British_Museum-illo009 set:

```
convert illo009-A_uc.png -fuzz 15% -fill red -opaque 'rgb(194,072,059)'  
-quality 100 illo009-A_uc-to_red15.png
```

This example starts with an upper case 'A' which is deep red in the center and less red outwardly and results in a new file, illo009-A_uc-to_red15.png, which is bright red in the center but is still the other reds around the center. Changing the -fuzz factor changes the number of pixels converted to red. More work is needed.

Example 3

For amusement, try using file illo093-A_uc.png from the original 44-Initials-illo093 set:

```
convert illo093-A_uc.png \( -fuzz 15% -fill blue -opaque '#d1442c'
-quality 100 \) \( -fuzz 10% -fill yellow -opaque '#f4a18c' -quality 100 \)
illo093-A_uc-to_blue15_yellow10.png
```

This example starts with as upper case 'A' which is deep red surrounded by lighter reds and results in a new file, illo093-A_uc-to_blue15_yellow10.png, which is bright blue in the center, surrounded by yellow, but is still the other reds around the yellow. Entertaining but ugly.

Example 4

On Linux, using the Bash looping commands in a shell script (or on the command line) allows a quick and easy change to multiple symbols. Starting in a directory with illo027-... PNG files, from the synthesized 96-12th_Century-Bodleian_Library-illo027 set:

```
#!/bin/bash -
#
# This is a simple example, not a fully proper program.
# No complaints please.
#
if [ ! -d New_Color ] ; then mkdir New_Color ; fi
#
NEW_COLOR="red"
OLD_COLOR='rgb(084,125,051)'
#
for i in illo027-*.png
do
#
    convert "$i" -fuzz 0% -fill "$NEW_COLOR" -opaque "$OLD_COLOR" -quality
100 New_Color/"$i"
#
done
#
```

This example assumes that bash is in /bin. Other shells, c shell, k shell etc., may work, or need a few tweaks for successful execution.. I have no equivalent for Windows, sorry. This is quick, clean and easy for the synthesized sets.

This same basic script can be used for changing the size and resolution of multiple symbols, the "convert" command and variable assignments need to be changed according to the new command requirements.

Conclusion

Changing image color with Image Magick works great for the pure color (synthesized) sets., However, use Gimp to change the colors on the original (anti-aliased) sets, there is a little less work.

Changing the Symbol Size

Changing a symbol's size is relatively easy, there are three ways. The procedure is the same for both the original sets and the synthesized sets.

Important, changing a symbol's size does not change the image resolution, the resolution remains the same. Changing the size merely changes the image dimensions by changing the number of pixels. Image Magick must make new pixels based on estimates from the old pixels.

The procedure for changing a symbol's size:

1. Copy the desired symbol PNG files to the working directory.
2. For each of the set, obtain and note the symbol size from the readme file.
3. Determine the new size.
4. For each symbol type the following command (spelling counts):

```
convert <symbol_file_name.png> -scale <SIZE>% -quality 100  
<output_file_name.png>
```

- The <symbol_file_name.png> is the name of the symbol which is the source image (aka the input file, including path name if needed). This file won't be changed. If the original is to be changed, then use "mogrify" in place of "convert" and omit the output filename.
- The "-scale" is one of three options for changing size. Scale is good for both increasing and decreasing the images' size.
- The <SIZE> is a percentage change,
 - The '%' character is necessary and no space is allowed between the number and the '%' character.
 - For example: "300%" means make the image three times larger. "33%" means make the image 1/3 the original size.
- The "-quality 100" sets the compression and quality of the output file. The number 100 is the best quality, and largest file size. Lower numbers are for more compression and increasing loss of image quality.
- Scale does NOT apply anti-aliasing to the output file.

An alternative is:

```
convert <symbol_file_name.png> -resize <SIZE>% -quality 100  
<output_file_name.png>
```

- The <symbol_file_name.png> is the name of the symbol which is the source image (aka the input file, including path name if needed). This file won't be changed. If the original is to be changed, then use "mogrify" in place of "convert" and omit the output filename.
- The "-resize" is the second of three options for changing size. Resize is good for both increasing and decreasing the images' size.
- The <SIZE> is a percentage change,
 - The '%' character is necessary and no space is allowed between the number and the '%' character.
 - For example: "300%" means make the image three times larger. "33%" means make the image 1/3 the original size.
- The "-quality 100" sets the compression and quality of the output file. The number 100 is the best quality, and largest file size. Lower numbers are for more compression and increasing loss of image quality.
- Resize DOES apply anti-aliasing to the output file.

The third option for changing size is "-sample". The use of "-sample" is not recommended by the IM people as "-sample" performs less well in reducing the size of images than either "-scale" or "-resize". The underlying algorithms decree this, not the code.

Examples

Example 1

Using file illo009-A_uc.png from the original 02-08th_Century-British_Museum-illo009 set:

```
convert illo009-A_uc.png -scale 300% -quality 100 illo009-A_uc-scale300.png
```

The original image (illo009-A_uc.png) is:

94 x 120 pixels, 1.305 x 1.666 inches, 72 x 72 ppi

This image already has anti-aliasing

The new image (illo009-A_uc-scale300.png) is:

282 x 360 pixels, 3.916 x 4.999 inches, 72 x 72 ppi,

No new anti-aliasing has been applied, because "-scale" was used.

Example 2

Using file illo009-A_uc.png from the original 02-08th_Century-British_Museum-illo009 set:

```
convert illo009-A_uc.png -resize 300% -quality 100 illo009-A_uc-  
resize300.png
```

The original image (illo009-A_uc.png) is:

94 x 120 pixels, 1.305 x 1.666 inches, 72 x 72 ppi

This image already has anti-aliasing

The new image (illo009-A_uc-scale300.png) is:

282 x 360 pixels, 3.916 x 4.999 inches, 72 x 72 ppi

New anti-aliasing, in addition to the old has been applied, because "-resize" was used. Image Magick automatically applies anti-aliasing, which can't be disabled, for many of it's commands. Some command allow anti-aliasing to disabled, resize is not one of them. Image Magick is unaware whether or not anti-aliasing has already been applied. In the input file a pixel is a pixel, regardless of how it came to be.

Changing the Symbol Resolution

Changing a symbol's resolution is a big deal and the results may be unexpected. The steps are simple, the consequences are the problem.

The procedure for changing a symbol's resolution:

1. Copy the desired symbol PNG files to the working directory.
2. Decide on the new resolution.
3. For each symbol type the following command (spelling counts):

```
convert <symbol_file_name.png> -units PixelsPerInch -resample <RESOLUTION>  
-quality 100 <output_file_name.png>
```

- The <symbol_file_name.png> is the name of the symbol which is the source image (aka the input file, including path name if needed). This file won't be changed. If the original is to be changed, then use "mogrify" in place of "convert" and omit the output filename.
- The '-units PixelsPerInch' set the resolution units, the default is "PixelsPerCM". Weird, when everything else defaults to inches, '-resample' defaults to cm.
- The "-resample <RESOLUTION>" changes the resolution to the "<RESOLUTION>" specified.
 - The "<RESOLUTION>" is the new resolution, in pixels per inch (-units PixelsPerInch)

- A single number, "300", applies to both horizontal and vertical resolution.
- Two numbers, "300x300", specifies separately the horizontal x vertical resolution.
- Resample DOES apply anti-aliasing to the output file.
 - Image Magick is unaware whether or not anti-aliasing has already been applied. A pixel is a pixel, regardless of how it came to be.

Example

Using file illo009-A_uc.png from the original 02-08th_Century-British_Museum-illo009 set:

```
convert illo009-A_uc.png -units PixelsPerInch -resample 300% -quality 100  
illo009-A_uc-resample300.png
```

The original image (illo009-A_uc.png) is:

94 x 120 pixels, 1.305 x 1.666 inches, 72 x 72 ppi

This image already has anti-aliasing

The new image (illo009-A_uc-scale300.png) is:

392 x 500 pixels, 1.307 x 1.667.000 inches, 299.999 x 299.999 ppi

Anti-aliasing has been applied (again), because "-resample" was used.

Changing the Symbol Size and Resolution Simultaneously

It is possible to change a symbol's size and resolution at the same time. The procedure for changing both a symbol's size and resolution:

1. Copy the desired symbol PNG files to the working directory.
2. Decide on the new size and new resolution.
3. For each symbol type the following command (spelling counts):

```
convert <symbol_file_name.png> -scale <SIZE>% -units PixelsPerInch -resample  
<RESOLUTION> -quality 100 <output_file_name.png>
```

- The <symbol_file_name.png> is the name of the symbol which is the source image (aka the input file, including path name if needed). This file won't be changed. If the original is to be changed, then use "mogrify" in place of "convert" and omit the output filename.
- The <SIZE> is a percentage change,
 - The '%' character is necessary and no space is allowed between the number and the '%' character.

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- For example: "300%" means make the image three times larger. "33%" means make the image 1/3 the original size.
- The '-units PixelsPerInch' set the resolution units, the default is "PixelsPerCM". Weird, when everything else defaults to inches, '-resample' defaults to cm.
- The "-resample <RESOLUTION>" changes the resolution to the "<RESOLUTION>" specified.
 - The "<RESOLUTION>" is the new resolution, in pixels per inch (-units PixelsPerInch)
 - A single number, "300", applies to both horizontal and vertical resolution.
 - Two numbers, "300x300", specifies separately the horizontal x vertical resolution..
- The "-resample" DOES apply anti-aliasing to the output file.
 - Image Magick is unaware whether or not anti-aliasing has already been applied. A pixel is a pixel, regardless of how it came to be.

Example

Using file illo009-A_uc.png from the original 02-08th_Century-British_Museum-illo009 set:

```
convert illo009-A_uc.png -scale 300% -units PixelsPerInch -resample 360  
-quality 100 illo009-A_uc-scale_resample.png
```

The original image (illo009-A_uc.png) is:

94 x 120 pixels, 1.305 x 1.666 inches, 72 x 72 ppi

This image already has anti-aliasing

The new image (illo009-A_uc-scale300.png) is:

1410 x 1800 pixels, 3.917 x 5.000 inches, 359.994 x 359.994 ppi

Anti-aliasing has been applied, because "-resample" was used.

Removing Symbol Anti-Aliasing Pixels

Don't try! The IM people are aware that this is very difficult. It has been said that the IM people may address this at a future date. Though, there may be sophisticated ways of doing this with IM, however, if so I don't know it. Use Gimp.

For Gimp

The following is a set of detailed tips to help in getting better use out of the ornamental alphabet symbols provided. This is not a Gimp tutorial, despite the detail. The user is expected to be able to open Gimp, patient enough to find the desired item, patient enough to wait for tool-tips and diligent enough to labor at the effort. Image processing is not cook-book simple for the unskilled. Certainly, no simple set of instructions can tell everyone exactly how to do exactly what they want. YMMV.

Check the installation by opening a command shell and typing:

```
gimp -version
```

The result should look something like:

```
GNU Image Manipulation Program version 2.8.18
```

If something quite different appears (the "2.8.18" is the version and may be different), or the screen indicates that the command is not found, then Gimp isn't installed correctly. Fix the installation problem before continuing.

The following assumes that Gimp and Gimp-Help have been properly installed and are functioning on the user's computer. The following procedures have been used with Gimp version 2.8.18 and Gimp-Help version 2.8.2.

Changing the Symbol Color

Changing color if one of the letters is simple in concept. However, in practice changing an image color can be laborious.

There are two situations with these image sets. The first and easiest is to use one of the synthesized sets. Most of the labor has been done. The images are of a single pure color and there are no anti-alias pixels. The procedure for a symbol from one of the synthesized sets is as follows:

1. Import the PNG image into Gimp.
2. Zoom to a convenient size. Remember numerals 1-5 are fixed zoom factors and the '+' is to zoom in and the '-' is to zoom out.
3. Activate the "Select by Color Tool" (Shift-O).
4. Go to the "Tool Options" tab and the "Select by Color" options should be displayed.
5. On the "Tool Options - Select by Color" tab select the "Mode": "Replace the current selection"
6. Set a preliminary "Threshold" (start with 10). This is number sets how close to the specifically selected pixel Gimp will select near (in color) by pixels. This does not select how close selected pixels are in distance, that is a different tool.
7. Click the cursor on a portion of the image to have it's color changed.

8. Look closely at the image, if not enough of the correct pixels are not selected or too many wrong pixels are selected, try a new threshold. There is a balancing act here. Individual pixels can be edited later.
 1. Using the synthesized sets (97... - 99...), all the colored pixels should be selected and none of the background pixels selected.
9. Click the foreground color icon and select the desired new color. The color can be selected by clicking on the colored image, or entered as numbers for RGB (decimal or hex) or HSV (decimal or hex). Click OK.
 1. An on-line HTML color chart is a good place to start evaluating color options.
10. Select the Bucket Fill Tool (keyboard Shift-B).
 1. Set the "Fill Type" to "FG color fill"
 2. Set the "Affected Area" to "Fill whole selection"
11. Click on a selected pixel, and voila, all the selected pixels should change to the new color.
12. Save the image as an XCF file, then export the file as a PNG file.
 1. The XCF file can load into Gimp faster, for future editing.
 2. The PNG file if for importing into the word processor.
13. At this point, a single letter image file is available to import into a word processor. If only the single symbol is needed, then exit Gimp.
 1. Copy the XCF and PNG files to their final storage location.

The procedure for the original sets is the same up to this point. The following must be added for the original set, due to the anti-aliasing pixels. For the anti-aliasing pixels that are a color "in between the base color and white":

1. Change the color of the largest area as above.
2. Select the desired range of anti-aliasing pixels, by correctly picking the "right" pixel and setting the threshold value.
3. Pick a new color, between the new color and white. Set the foreground color to this.
4. Select the Bucket Fill Tool (keyboard Shift-B).
 1. Set the "Fill Type" to "FG color fill"
 2. Set the "Affected Area" to "Fill whole selection"
5. Repeat for another range of anti-alias pixels. Yes this is tedious.

An alternative procedure is to

1. Remove the anti-aliasing,

2. Cleanup the image.
3. Change the color.
4. Re-apply the anti-aliasing (if desired).

This procedure may be more or less tedious than the previous one. This latter procedure was used to create the synthesized set, without re-applying the anti-aliasing.

Changing the Symbol Size

Changing a symbol's size is simple but may generate a surprising amount of work. The procedure for changing a symbol's size:

1. Import the PNG image into Gimp.
2. Zoom to a convenient size. Remember numerals 1-5 are fixed zoom factors and the '+' is to zoom in and the '-' is to zoom out.
3. Select "Image" -> "Canvas Size"
 1. The "Set Image Canvas Size" window appears.
4. In the "Set Image Canvas Size" window, the default size is in pixels
 1. Set the new height and width pixels size values.
 2. The "chain" symbol determines if the ratio of height to width is kept or independent.
 1. If the chain is intact, then setting the height sets the width also, and vice versa.
 2. If the chain is broken, then the height and width must be set individually.
 3. This performs the same function as "Keep ratio" in LibreOffice import screen.
 3. If linear measurement is easier set "Canvas Size" drop down box to the desired measurement and adjust the width and height values.
5. Click OK.
 1. The image will have the new dimensions.
 2. WARNING, this doesn't change the resolution of the image.
6. Save the image and export the PNG for the word processor.

Changing a symbol's size has different effects depending on the direction of the change. An increase in image size requires Gimp to create new data from the old. A decrease in the image size requires Gimp to throw away data and estimate between values. Both case generally require the user to manually adjust the results.

Changing the Resolution

Changing a symbol's resolution is a big deal, count on having a significant amount of work. The steps are simple, the consequences are the problem. To change the resolution:

1. Import the PNG image into Gimp.

2. Zoom to a convenient size. Remember numerals 1-5 are fixed zoom factors and the '+' is to zoom in and the '-' is to zoom out.
3. Select "Image" -> "Print Size"
 1. The "Set Image Print Resolution" window appears.
 2. The "Print Size" height, width and resolution appear.
4. In the "Set Image Print Resolution" window set the new resolution.
5. Click OK.
6. Save the file. Export to PNG if this is all that is desired. Remember, images imported into word processors are often needed smaller than their original size.

At this point the image is at the new resolution, but reduced in size by the scale factor which increased the resolution. If the original size is desired at the new resolution, then the image must be scaled upward. In scaling both the resolution and size of the image upward by the same integer multiple, one compensates for the other. An odd multiple turns a single original pixel into a box the odd number of pixels on a side. For example, a 3x (72 -> 360) scale factor changes each pixel into a 3x3 set of pixels. This sort of conversion is easier to edit and makes smoother lines further on. The higher the multiple then the smoother the lines, but the greater amount of manual work later.

To scale the image:

1. Now scale the symbol by the same scale factor chosen for the resolution change (3x, 5x ...). Select "Image" -> "Canvas Size"
 1. The "Set Image Canvas Size" window appears.
2. In the "Set Image Canvas Size" window, the default size is in pixels
 1. Set the new height and width pixels size values, by multiplying the current values by the same scale factor used to increase the resolution.
 1. The user must manually do the math, i. e. multiply the height/width by the resolution scale factor and set the new values.
 2. The "chain" symbol determines if the ratio of height to width is kept or independent.
 1. If the chain is intact, then setting the height sets the width also, and vice versa.
 2. If the chain is broken, then the height and width must be set individually.
 3. This performs the same function as "Keep ratio" in LibreOffice import screen.
 3. If the scale factor isn't an integer multiple or the height and width are handled separately, things can quickly get ugly!
3. Click OK.
 1. The image will have the new dimensions and new resolution. The image should look the same.

2. Every single pixel in the original image is now a 3x3 box (for a 3x scale factor) in the new image.
4. Save the image.
5. The image can now be edited to create smoother/sharper lines.
 1. For simple images (like letter symbols) the "Pencil Tool" can be used. For complex images the "Filter" menu may need to be explored. Check the Gimp-Help and Web for help on using filters.
6. Save the image and export the PNG file.

Changing a symbol's resolution generally requires the user to manually adjust the results. However, the use of integer multiples reduces the work load.

Removing Symbol Anti-Aliasing Pixels

Removing anti-aliasing appears simple in concept. However, in practice removing anti-alias pixels can be laborious.

There are two situations with these image sets. The first and easiest is to use one of the synthesized sets, they have no anti-alias pixels.

The original set still have their anti-alias pixels and must be changed as follows:

7. Import the PNG image into Gimp.
8. Zoom to a convenient size. Remember numerals 1-5 are fixed zoom factors and the '+' is to zoom in and the '-' is to zoom out.
9. Activate the "Select by Color Tool" (Shift-O).
10. Go to the "Tool Options" tab and the "Select by Color" options should be displayed.
11. On the "Tool Options - Select by Color" tab select the "Mode": "Replace the current selection"
12. Set a preliminary "Threshold" (start with 10). This is number sets how close to the specifically selected pixel Gimp will select near (in color) by pixels. This does not select how close selected pixels are in distance, that is a different tool.
13. Click the cursor on a portion of the image with the base color. Look carefully at the image.
14. Click the cursor on the background. Look again carefully at the image. The purpose is to balance the pixels to be "kept" with those to be removed.
15. If the balance isn't correct, change the "Threshold" number in the "Tool Options - Select by Color" tab.
16. Click on both the background and the portion of the image with the base color. Look at the portion selected in both cases.
17. Continue adjusting the Threshold and examining the portions selected for background and image base color until there is a good balance.

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1. Most images have a certain amount of variability. As such there is no one right number.
2. The user must establish the amount of detail to be kept, the amount to be discarded and the amount detail to be manually redrawn after the anti-alias pixels are gone.
18. When satisfied at the balance, select the background
19. Click the foreground color icon and select white for the new foreground color.
20. Select the Bucket Fill Tool (keyboard Shift-B).
 1. Set the "Fill Type" to "FG color fill"
 2. Set the "Affected Area" to "Fill whole selection"
21. Click on the background. The background pixels and about half of the anti-alias pixels will turn white.
22. Click the foreground color icon and select the desired new color. The color can be selected by clicking on the colored image, or entered as numbers for RGB (decimal or hex) or HSV (decimal or hex). Click OK.
23. Activate the "Select by Color Tool" (Shift-O).
24. Click on the background. Yes the background again.
25. Select "Invert Color" ("Colors" -> "Invert", keyboard: Ctrl-I).
26. Select the Bucket Fill Tool (keyboard Shift-B).
 1. Set the "Fill Type" to "FG color fill"
 2. Set the "Affected Area" to "Fill whole selection"
27. Click on the base colored portion of the symbol, NOT the background.
 1. The image should be white and the selected color,
 2. A bunch of wrong colored pixels scattered across the image.
 3. A bunch of "missing" pixels will be absent also.
28. Manually cleanup the image. The "Pencil Tool" is good for this.
29. If desired add new anti-aliasing in Gimp by: "Filter" -> "Enhance" -> "Antialias".
 1. Repeated selections adds more anti-alias pixels.
30. Save the image.
31. Export the image to a PNG file. Use the PNG file in the word processor.

Combining Multiple Symbols into a Word/Name/Logo

1. Import the first symbol file, use the XCF file if available otherwise the PNG file.
 1. If desired, edit their color (Changing Color steps 2-11 above on each).
 2. If desired, change their size (Changing Size steps 2-11 above on each).
2. At this all the desired symbols are present in Gimp and the correct color.

3. Add up all the widths of the symbols. Use "Image" -> "Image Properties" to obtain all the symbol dimensions and add up all the widths.
4. Find the maximum height of the largest letter.
5. Set the background to white.
6. Create a new Gimp document use the combined widths plus a significant margin and the maximum height, plus a significant margin, for the dimensions of the new document.
7. For the first symbol, click on the symbol's tab and copy the symbol (Ctrl-C), return to the new page and paste as a layer "Edit" -> "Paste As" -> "New Layer" (NOT Ctrl-V).
8. Move (Move tool or keyboard 'M') the layer to its approximate position.
9. Repeat steps 5 and 6 for each subsequent symbol.
10. At this point, all the symbols are in the new document. Move the symbols around until satisfied with their arrangement. If necessary increase the canvas size, (with a white background) "Image" -> "Canvas Size", set the new canvas size.
11. Save the new document.
12. Add any lines, flourishes and so on desired, preferably as new layers. Adjust the new items location as desired.
 1. Don't merge the layers downward, separate layers allows further, easier editing if desired.
13. Again save the new document
14. Export to a PNG file. This PNG file is now ready to be imported into the word processor.

Smoothing Images

Images whose resolution and/or size has been increased are rather pixellated, smoothing such images is simple in concept. However, in practice pixellated images is laborious. Several methods have been tried but only the following method, by path, is presented.

1. 1. Convert 72dpi image to 300dpi image
 - Example:
 - `convert illo081-J_uc.png -scale 416% -units PixelsPerInch -resample 300 -quality 100 300DPI.WBG/illo081-J_uc.jpg`
2. Smoothing: import 300dpi image into Gimp, by paths.
3. Select the colored portion of the image.
 - (Image Magick, step 1, inflicted anti-aliasing)
 - Select by Color (Shift-o),
 - Threshold: 150 to 175, usually 150
4. Bucket fill (Shift-b) the symbol with the desired color.
5. Invert the selection (Ctrl-i).

6. Bucket fill (Shift-b) outside the symbol with the background color (usually white. All anti-alias pixels should be gone.
7. Save the image to xcf.
8. Select the "Paths" tool (Keyboard-b).
9. Place Path anchor points (open circles) at each place where the curve of the shape changes.
 - See the gimp tutorial on paths.
10. Adjust each path segment for a smooth curve and a smooth transition between path segments.
 - This requires a good eye and patience.
 - Hint: The control handles (open squares) should form a straight line for a good transition between segments. This isn't always the case, as there are sharp transitions on many symbols where the control handles will need to be not in a straight line.
 - Hint: When creating a path around a shape, quarter circles are usually more manageable, than half circles (semi-circles).
 - Hint: Place your anchor points as closely as desired, then zoom in to perform the final positioning. The path should follow the perimeter of the shape.
 - Hint: Careful attention to the grid will aid in the positioning of the anchor points and control handles.
 - Hint: Paths can be copied, rotated and adjusted similarly to images. However, one must select the "path" on the "Tool Option" tab of the dock after selecting the action to be performed. Unfortunately, there is no consistent nomenclature for this. On the Flip tool option, one uses "Affect", on the Rotate tool option, one uses "Transform", on the Move tool option, one uses "Move" and so on.
 - Hint: Save frequently.
11. Select the "Path" tab, in the dock.
12. There should be at least one path in the window.
 - Right click (for the context menu) on the main path and give it a name.
 - Left click on the "eye" symbol to make the path visible. The path is "sort of" visible while editing it. However, with out the "eye" symbol being shown, the path will disappear when some non-path action is taken.
13. Adjust the path(s) as desired.
 - Hint: For the most accurate shape, place the anchor points very close to the edges of the image.
14. If there are multiple paths, merge all the paths.
 - Right click in the path window and select "Merge Visible Paths"
15. If desired, export the path to an SVG file

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- In the Path tab -> Right Click -> "Export"
16. Once the path is satisfactory, then clear out the image pixels.
 - Bucket fill (Shift-b) the symbol with the background color.
 - The whole image should be the background color.
 17. In the Path tab of the dock, click on the path to select the path.
 18. In the Path tab of the dock, click on the path to selection icon (the red square in the raised area just below the window area).
 - The path should be approximated by the marching ants. The marching ants won't follow the path exactly (with a low resolution image). The ants follow the pixel borders and the path doesn't.
 19. Set the foreground color.
 20. Select bucket fill (shift-B) and click inside the path area (delineated by the marching ants).
 - Note, Gimp automatically applies anti-aliasing in this step.
 21. Deselect the path (control-shift-a).
 22. Look closely at the image. Make any adjustments in the path that are necessary. If changes are made, repeat steps 17 to 23.
 23. Save the image as an xcf file.
 24. If the anti-aliased image is desirable, export the image to PNG/JPG or the desired file format.
 25. If no anti-aliasing is desirable then select the colored portion of the image. Select by Color (Shift-o),
 - On the "Tool Options" tab of the dock set the threshold: 150 to 175.
 26. Bucket fill (Shift-b) the symbol with the desired color.
 27. Invert the selection (Ctrl-i).
 28. Bucket fill (Shift-b) outside the symbol with the desired background color (usually white).
 - All the anti-alias pixels should be gone and the image have only two colors, foreground and background.
 29. Save the image to xcf.
 30. Export the image to PNG/JPG or the desired file format.

However difficult this seems, this method is also both easier and faster than pixel editing. The user must experiment and decide. This method has a noticeable learning curve, regarding paths.

Ragtag and Bobtail

Background color: On-screen versus printed documents

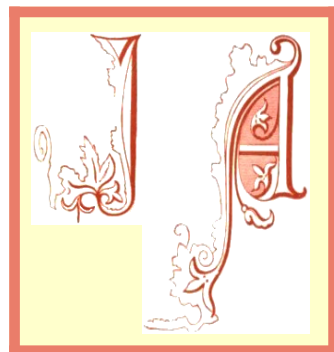
A document using the image symbols may be appear different when printed, versus on screen. Many printers & printer drivers assume that all paper is white. Therefore, they do not print "white" pixels, allowing the color of the paper to show through areas which have white pixels.

Using the above ("Names, titles & logos") example logo for Internet Archive:



This first logo appears to have a white background on screen. Invisible but present in the symbols are white background pixels, with a two pixel perimeter (top: 2px, bottom: 2px, left: 2px and right: 2px). On a white document background this image background is invisible. However, when printed on colored paper, the color of the paper shows where the white pixels are displayed on screen.

The second logo appears rather curious. The logo symbols when placed on a colored background display the white background pixels. For example:



Printing this logo on colored paper results in the yellow background of the frame being displayed in that part of the frame not covered by the letter symbols. The background color of the letter symbols is the color of the paper (not the yellow of the frame background). The printer didn't print the white pixels.

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The synthesized sets (97... through 99...) have a subdirectory/folder called "NOBG". The "NOBG" subdirectory/folder have copies of the symbol set with the white background removed. Below is a logo using the no background images.



This third logo in appears as one would expect, the paper color didn't show through the frame anywhere. The background color of the letter symbols was the yellow of the frame background.

Test your printer and compose your documents accordingly.

Character Style

The full set covers a range of time from the 9th Century A. D. to the 17th Century A. D. . In that time the many letters have changed their shape significantly. Many older letters are barely recognizable, In some cases the letters have taken the form of other letters. For example, the letter "H" (upper case) is relatively recent, for many centuries the upper case "H" had the shape of the modern lower case "h". In creating these sets the position of a symbol in the original JPG image was a major indicator of which letter, when the letter shape was ambiguous. In some sets, there is some doubt about some of the last letters of the alphabet. The letters 'U', 'V', 'W' are all rather similar and some frequently missing. Thus the assignment of letter names versus shapes is a best guess, not an expert opinion.

Appendix I: Symbol Sets

Page	Symbol Set	Illustration	Subdirectory/Folder
01	08th Century Vatican	illo007.jpg	01-08th_Century-Vatican-illo007/
02	08th Century British Museum	illo009.jpg	02-08th_Century-British_Museum-illo009/
03	8th and 9th Century Anglo-Saxon	illo011.jpg	03-8th_and_9th_Century-Anglo-Saxon-illo011/
04	9th Century Anglo-Saxon Battel Abbey	illo013.jpg	04-9th_Century-Anglo-Saxon-Battel_Abbey-illo013/
05	Library of Minerva	illo015.jpg	05-Library_of_Minerva-illo015/
06	10th Century British Museum	illo017.jpg	06-10th_Century-British_Museum-illo017/
07	11th Century Letters and Numerals	illo019.jpg	07-11th_Century-Letters_and_Numerals-illo019/
08	12th Century Mazarin	illo021.jpg	08-12th_Century-Mazarin-illo021/
09	12th Century Two small British Museum	illo023.jpg	09-12th_Century-Two_small_British_Museum-illo023/
10	12th Century British Museum	illo025.jpg	10-12th_Century-British_Museum-illo025/
11	12th Century Bodleian Library	illo027.jpg	11-12th_Century-Bodleian_Library-illo027/
12	13th Century Henry the Third	illo029.jpg	12-13th_Century-Henry_the_Third-illo029/
13	13th Century From Latin MS	illo031.jpg	13-13th_Century-From_Latin_MS-illo031/
14	13th Century Manuscript	illo033.jpg	14-13th_Century-Manuscript-illo033/
15	14th Century Date about 1340	illo035.jpg	15-14th_Century-Date_about_1340-illo035/
16	14th Century British Museum	illo037.jpg	16-14th_Century-British_Museum-illo037/
17	14th Century Illuminated MS	illo039.jpg	17-14th_Century-Illuminated_MS-illo039/
18	14th Century Richard the Second Upper	illo041.jpg	18-14th_Century-Richard_the_Second_UC-illo041/
19	14th Century Richard the Second Lower	illo043.jpg	19-14th_Century-Richard_the_Second_LC-illo043/
20	14th Century British Museum	illo045.jpg	20-14th_Century-British_Museum-illo045/
21	14th Century Munich	illo047.jpg	21-14th_Century-Munich-illo047/
22	14th and 15th Centuries Two Small British Museum	illo049.jpg	22-14th_and_15th_Centuries_Two_Small_British_Museum-illo049/
23	1475 British Museum	illo051.jpg	23-1475_British_Museum-illo051/
24	1480 British Museum	illo053.jpg	24-1480_British_Museum-illo053/
25	1490 British Museum	illo055.jpg	25-1490-British_Museum-illo055/
26	Henry VII Westminster Abbey	illo057.jpg	26-Henry_VII_Westminster_Abbey-illo057/
27	15th & 16th Century German Upper Case	illo059.jpg	27-15th_16th_Century-German_UC-illo059/
28	15th & 16th Century German Lower Case	illo061.jpg	28-15th_16th_Century-German_LC-illo061/
29	15th & 16th Century Ornamental Riband	illo063.jpg	29-15th_16th_Century-Ornamental_Riband-illo063/
30	16th Century Henry VIII MS	illo065.jpg	30-16th_Century-Henry_VIII_MS-illo065/
31	16th Century From Italian MS	illo067.jpg	31-16th_Century-From_Italian_MS-illo067/
32	16th Century Albert Durers Prayer Book Upper Case	illo069.jpg	32-16th_Century-Albert_Durers_Prayer_Book_UC-illo069/
33	16th Century Albert Durers Prayer Book Lower Case	illo071.jpg	

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33-16th_Century-Albert_Durers_Prayer_Book_LC-illo071/

34	16th Century Vatican	illo073.jpg	34-16th_Century-Vatican-illo073/
35	16th Century Gothic MS	illo075.jpg	35-16th_Century-Gothic_MS-illo075/
36	16th Century Gothic	illo077.jpg	36-16th_Century-Gothic-illo077/
37	16th Century Gothic MS	illo079.jpg	37-16th_Century-Gothic_MS-illo079/
38	16th Century French Letters Numerals	illo081.jpg	38-16th_Century-French_Letters_Numerals-illo081/
39	17th Century Manuscript	illo083.jpg	39-17th_Century-Manuscript-illo083/
40	17th Century Church Manuscript	illo085.jpg	40-17th_Century-Church_Manuscript-illo085/
41	German Arabesque Lower Case	illo089.jpg	41-German_Arabesque-Lower_Case-illo089/
42	German Arabesque Upper Case	illo087.jpg	42-German_Arabesque-Upper_Case-illo087/
43	Metal Ornament	illo091.jpg	43-Metal_Ornament-illo091/
44	Initials	illo093.jpg	44-Initials-illo093/
45	Initials	illo095.jpg	45-Initials-illo095/
46	15th Century	illo097.jpg	46-15th_Century-illo097/
47	Initials	illo099.jpg	47-Initials-illo099/
48	Numerals	illo101.jpg	48-Numerals-illo101/
49	Numerals	illo103.jpg	49-Numerals-illo103/
50	16th Century	illo105.jpg	50-16th_Century-illo105/
51	16th Century	illo107.jpg	51-16th_Century-illo107/
52	16th Century From Wood Engravings	illo109.jpg	52-16th_Century-From_Wood_Engravings-illo109/
53	Monograms Crosses etc	illo111.jpg	53-Monograms_Crosses_etc-illo111/
96	12th Century Bodleian Library	illo027.jpg	96-12th_Century-Bodleian_Library-illo027/
97	15th Century	illo097.jpg	97-15th_Century-illo097/
98	16th Century Albert Durers Prayer Book	illo069.jpg & illo071.jpg	98-16th_Century-Albert_Durers_Prayer_Book-combined/
99	16th Century French Letters Numerals	illo081.jpg	99-16th_Century-French_Letters_Numerals-illo081/

Appendix II: Symbol Set by Case

Lower Case, only

09-12th_Century-Two_Small_British_Museum-illo023/
19-14th_Century-Richard_the_Second_LC-illo043/
22-14th_and_15th_Centuries-Two_Small_British_Museum-illo049/
28-15th_16th_Century-German_LC-illo061/
29-15th_16th_Century-Ornamental_Riband-illo063/
33-16th_Century-Albert_Durers_Prayer_Book_LC-illo071/
36-16th_Century-Gothic-illo077/
42-German_Arabesque-Lower_Case-illo089/
46-15th_Century-illo097/
52-16th_Century-From_Wood_Engravings-illo109/

Upper Case, only

01-08th_Century-Vatican-illo007/
02-08th_Century-British_Museum-illo009/
03-8th_and_9th_Century-Anglo-Saxon-illo011/
04-9th_Century-Anglo-Saxon-Battel_Abbey-illo013/
05-Library_of_Minerva-illo015/
06-10th_Century-British_Museum-illo017/

08-12th_Century-Mazarin-illo021/

10-12th_Century-British_Museum-illo025/
11-12th_Century-Bodleian_Library-illo027/
12-13th_Century-Henry_the_Third-illo029/
13-13th_Century_From_Latin_MS-illo031/
14-13th_Century-Manuscript-illo033/
15-14th_Century-Date_about_1340-illo035/
16-14th_Century-British_Museum-illo037/
17-14th_Century-Illuminated_MS-illo039/
18-14th_Century-Richard_the_Second_UC-illo041/

20-14th_Century-British_Museum-illo045/
21-14th_Century-Munich-illo047/

23-1475_British_Museum-illo051/
24-1480_British_Museum-illo053/

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25-1490-British_Museum-illo055/

26-Henry_VII_Westminster_Abbey-illo057/

27-15th_16th_Century-German_UC-illo059/

30-16th_Century-Henry_VIII_MS-illo065/

31-16th_Century-From_Italian_MS-illo067/

32-16th_Century-Albert_Durers_Prayer_Book_UC-illo069/

34-16th_Century-Vatican-illo073/

35-16th_Century-Gothic_MS-illo075/

37-16th_Century-Gothic_MS-illo079/

39-17th_Century-Manuscript-illo083/

40-17th_Century-Church_Manuscript-illo085/

41-German_Arabesque-Upper_Case-illo087/

43-Metal_Ornament-illo091/

44-Initials-illo093/

45-Initials-illo095/

47-Initials-illo099/

50-16th_Century-illo105/

51-16th_Century-illo107/

Upper and Lower Case Letters

38-16th_Century-French_Letters_Numerals-illo081/

46-15th_Century-illo097/

Upper Case Letters and Numbers

07-11th_Century-Letters_and_Numerals-illo019/

Numbers, only

48-Numerals-illo101/

49-Numerals-illo103/

Non-Letter, Non-Number Symbols

53-Monograms_Crosses_etc-illo111/

Appendix III: Concise List of Synthesized Symbols

01-08th_Century-Vatican-illo007: Upper Case Letters: 'J', 'W'

01-08th_Century-Vatican-illo007: Lower Case Letters: None

01-08th_Century-Vatican-illo007: Punctuation: None

02-08th_Century-British_Museum-illo009: Upper Case Letters: 'J', 'V', 'W', 'Y', 'Z'

02-08th_Century-British_Museum-illo009: Lower Case Letters: None

02-08th_Century-British_Museum-illo009: Punctuation: None

03-8th_and_9th_Century-Anglo-Saxon-illo011: Upper Case Letters: 'W', 'Y'

03-8th_and_9th_Century-Anglo-Saxon-illo011: Lower Case Letters: None

03-8th_and_9th_Century-Anglo-Saxon-illo011: Punctuation: None

04-9th_Century-Anglo-Saxon-Battel_Abbey-illo013: Upper Case Letters: None

04-9th_Century-Anglo-Saxon-Battel_Abbey-illo013: Lower Case Letters: None

04-9th_Century-Anglo-Saxon-Battel_Abbey-illo013: Punctuation: None

05-Library_of_Minerva-illo015: Upper Case Letters: None

05-Library_of_Minerva-illo015: Lower Case Letters: None

05-Library_of_Minerva-illo015: Punctuation: None

06-10th_Century-British_Museum-illo017: Upper Case Letters: 'W'

06-10th_Century-British_Museum-illo017: Lower Case Letters: None

06-10th_Century-British_Museum-illo017: Punctuation: None

07-11th_Century-Letters_and_Numerals-illo019: Upper Case Letters: 'J'

07-11th_Century-Letters_and_Numerals-illo019: Lower Case Letters: None

07-11th_Century-Letters_and_Numerals-illo019: Punctuation: None

08-12th_Century-Mazarin-illo021: Upper Case Letters: None

08-12th_Century-Mazarin-illo021: Lower Case Letters: None

08-12th_Century-Mazarin-illo021: Punctuation: None

09-12th_Century-Two_Small_British_Museum-illo023: Upper Case Letters: None

09-12th_Century-Two_Small_British_Museum-illo023: Lower Case Letters: 'j' and 'v', for both sets

09-12th_Century-Two_Small_British_Museum-illo023: Punctuation: None

10-12th_Century-British_Museum-illo025: Upper Case Letters: None

10-12th_Century-British_Museum-illo025: Lower Case Letters: None

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10-12th_Century-British_Museum-illo025: Punctuation: None

11-12th_Century-Bodleian_Library-illo027: Upper Case Letter: 'J',

11-12th_Century-Bodleian_Library-illo027: Lower Case Letters: None

11-12th_Century-Bodleian_Library-illo027: Punctuation: None

12-13th_Century-Henry_the_Third-illo029: Upper Case Letters: 'J'

12-13th_Century-Henry_the_Third-illo029: Lower Case Letters: None

12-13th_Century-Henry_the_Third-illo029: Punctuation: None

13-13th_Century_From_Latin_MS-illo031: Upper Case Letters: 'J'

13-13th_Century_From_Latin_MS-illo031: Lower Case Letters: None

13-13th_Century_From_Latin_MS-illo031: Punctuation: None

14-13th_Century-Manuscript-illo033: Upper Case Letters: 'J', 'V'

14-13th_Century-Manuscript-illo033: Lower Case Letters: None

14-13th_Century-Manuscript-illo033: Punctuation: None

15-14th_Century-Date_about_1340-illo035: Upper Case Letters: 'J', 'U' (second) And 'V'

15-14th_Century-Date_about_1340-illo035: Lower Case Letters: None

15-14th_Century-Date_about_1340-illo035: Punctuation: None

16-14th_Century-British_Museum-illo037: Upper Case Letters: 'J' 'U' and 'W'

16-14th_Century-British_Museum-illo037: Lower Case Letters: None

16-14th_Century-British_Museum-illo037: Punctuation: None

17-14th_Century-Illuminated_MS-illo039: Upper Case Letters: 'J'

17-14th_Century-Illuminated_MS-illo039: Lower Case Letters: None

17-14th_Century-Illuminated_MS-illo039: Punctuation: None

18-14th_Century-Richard_the_Second_UC-illo041: Upper Case Letters: 'J','V',

18-14th_Century-Richard_the_Second_UC-illo041: Lower Case Letters: None

18-14th_Century-Richard_the_Second_UC-illo041: Punctuation: None

19-14th_Century-Richard_the_Second_LC-ill0043: Upper Case Letters: None

19-14th_Century-Richard_the_Second_LC-ill0043: Lower Case Letters: 'j'

19-14th_Century-Richard_the_Second_LC-ill0043: Punctuation: None

20-14th_Century-British_Museum-illo045: Upper Case Letters: 'J'

20-14th_Century-British_Museum-illo045: Lower Case Letters: None

20-14th_Century-British_Museum-illo045: Punctuation: None

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21-14th_Century-Munich-illo047: Upper Case Letters: 'J' and 'V'

21-14th_Century-Munich-illo047: Lower Case Letters: None

21-14th_Century-Munich-illo047: Punctuation: None

22-14th_and_15th_Centuries-Two_Small_British_Museum-illo049: Upper Case Letters: None

22-14th_and_15th_Centuries-Two_Small_British_Museum-illo049: Lower Case Letters: 'j'

22-14th_and_15th_Centuries-Two_Small_British_Museum-illo049: Punctuation: None

23-1475_British_Museum-illo051: Upper Case Letters: 'J', 'V' and 'W'

23-1475_British_Museum-illo051: Lower Case Letters: None

23-1475_British_Museum-illo051: Punctuation: None

24-1480_British_Museum-illo053: Upper Case Letters: 'J', 'V' and 'W'

24-1480_British_Museum-illo053: Lower Case Letters: None

24-1480_British_Museum-illo053: Punctuation: None

25-1490-British_Museum-illo055: Upper Case Letters: None

25-1490-British_Museum-illo055: Lower Case Letters: None

25-1490-British_Museum-illo055: Punctuation: None

26-Henry_VII_Westminster_Abbey-illo057: Upper Case Letters: 'J', 'V'

26-Henry_VII_Westminster_Abbey-illo057: Lower Case Letters: None

26-Henry_VII_Westminster_Abbey-illo057: Punctuation: None

27-15th_16th_Century-German_UC-illo059: Upper Case Letters: 'J'

27-15th_16th_Century-German_UC-illo059: Lower Case Letters: None

27-15th_16th_Century-German_UC-illo059: Punctuation: None

28-15th_16th_Century-German_LC-illo061: Upper Case Letters: None

28-15th_16th_Century-German_LC-illo061: Lower Case Letters: None

28-15th_16th_Century-German_LC-illo061: Punctuation: None

29-15th_16th_Century-Ornamental_Riband-illo063: Upper Case Letters: None

29-15th_16th_Century-Ornamental_Riband-illo063: Lower Case Letters: 'j', 'm', 'v' and 'w'

29-15th_16th_Century-Ornamental_Riband-illo063: Punctuation: None

29-15th_16th_Century-Ornamental_Riband-illo063: Numbers: None

30-16th_Century-Henry_VIII_MS-illo065: Upper Case Letters: 'J', 'U' 'W' an 'X'

30-16th_Century-Henry_VIII_MS-illo065: Lower Case Letters: None

30-16th_Century-Henry_VIII_MS-illo065: Punctuation: None

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31-16th_Century-From_Italian_MS-illo067: Upper Case Letters: 'J', 'O', 'U' and 'V'

31-16th_Century-From_Italian_MS-illo067: Lower Case Letters: None

31-16th_Century-From_Italian_MS-illo067: Punctuation: None

32-16th_Century-Albert_Durers_Prayer_Book_UC-illo069: Upper Case Letters: 'J', 'V'

32-16th_Century-Albert_Durers_Prayer_Book_UC-illo069: Lower Case Letters: None

32-16th_Century-Albert_Durers_Prayer_Book_UC-illo069: Punctuation: None

33-16th_Century-Albert_Durers_Prayer_Book_LC-illo071: Upper Case Letters: None

33-16th_Century-Albert_Durers_Prayer_Book_LC-illo071: Lower Case Letters: 'j'

33-16th_Century-Albert_Durers_Prayer_Book_LC-illo071: Punctuation: None

34-16th_Century-Vatican-illo073: Upper Case Letters: None

34-16th_Century-Vatican-illo073: Lower Case Letters: None

34-16th_Century-Vatican-illo073: Punctuation: None

35-16th_Century-Gothic_MS-illo075: Upper Case Letters: 'J'

35-16th_Century-Gothic_MS-illo075: Lower Case Letters: None

35-16th_Century-Gothic_MS-illo075: Punctuation: None

36-16th_Century-Gothic-illo077: Upper Case Letters: None

36-16th_Century-Gothic-illo077: Lower Case Letters: None

36-16th_Century-Gothic-illo077: Punctuation: None

37-16th_Century-Gothic_MS-illo079: Upper Case Letters: 'J' and 'Q'

37-16th_Century-Gothic_MS-illo079: Lower Case Letters: None

37-16th_Century-Gothic_MS-illo079: Punctuation: None

38-16th_Century-French_Letters_Numerals-illo081: Upper Case Letters: 'J'

38-16th_Century-French_Letters_Numerals-illo081: Lower Case Letters: 'w'

38-16th_Century-French_Letters_Numerals-illo081: Punctuation: None

39-17th_Century-Manuscript-illo083: Upper Case Letter: 'J'

39-17th_Century-Manuscript-illo083: Lower Case Letters: None

39-17th_Century-Manuscript-illo083: Punctuation: None

40-17th_Century-Church_Manuscript-illo085: Upper Case Letters: 'J', 'V'

40-17th_Century-Church_Manuscript-illo085: Lower Case Letters: None

40-17th_Century-Church_Manuscript-illo085: Numbers: None

40-17th_Century-Church_Manuscript-illo085: Punctuation: None

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41-German_Arabesque-Upper_Case-illo087: Upper Case Letters: 'J'
41-German_Arabesque-Upper_Case-illo087: Lower Case Letters: None
41-German_Arabesque-Upper_Case-illo087: Punctuation: None

42-German_Arabesque-Lower_Case-illo089: Upper Case Letters: None
42-German_Arabesque-Lower_Case-illo089: Lower Case Letters: None
42-German_Arabesque-Lower_Case-illo089: Punctuation: None

43-Metal_Ornament-illo091: Upper Case Letters: None
43-Metal_Ornament-illo091: Lower Case Letters: None
43-Metal_Ornament-illo091: Punctuation: None

44-Initials-illo093: Upper Case Letters: None
44-Initials-illo093: Lower Case Letters: None
44-Initials-illo093: Punctuation: None

45-Initials-illo095: Upper Case Letters: None
45-Initials-illo095: Lower Case Letters: None
45-Initials-illo095: Punctuation: None

46-15th_Century-illo097: Upper Case Letters: 'I', 'J', 'V', 'X' and 'Z'
46-15th_Century-illo097: Lower Case Letters: 'j'
46-15th_Century-illo097: Punctuation: None

47-Initials-illo099: Upper Case Letters: None
47-Initials-illo099: Lower Case Letters: None
47-Initials-illo099: Punctuation: None

48-Numerals-illo101: Upper Case Letters: None
48-Numerals-illo101: Lower Case Letters: 'None'
48-Numerals-illo101: Punctuation: None
48-Numerals-illo101: Numbers: None

49-Numerals-illo103: Upper Case Letters: None
49-Numerals-illo103: Lower Case Letters: 'None'
49-Numerals-illo103: Punctuation: None
49-Numerals-illo103: Numbers: None

50-16th_Century-illo105: Upper Case Letters: None
50-16th_Century-illo105: Lower Case Letters: None

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50-16th_Century-illo105: Punctuation: None

51-16th_Century-illo107: Upper Case Letters: None

51-16th_Century-illo107: Lower Case Letters: None

51-16th_Century-illo107: Punctuation: None

52-16th_Century-From_Wood_Engravings-illo109: Upper Case Letters: None

52-16th_Century-From_Wood_Engravings-illo109: Lower Case Letters: None (missing letters)

52-16th_Century-From_Wood_Engravings-illo109: LC Without flourishes: 'b', 'd', 'f', 'g', 'h', 'k', 'l', 'p', 'q', 's', 'ss', 't' and 'z'

52-16th_Century-From_Wood_Engravings-illo109: Punctuation: None

53-Monograms_Crosses_etc-illo111: None

96-12th_Century-Bodleian_Library-illo027: Upper Case Letter: 'J',

96-12th_Century-Bodleian_Library-illo027: Lower Case Letters: "a-z",

96-12th_Century-Bodleian_Library-illo027: Punctuation: All

97-15th_Century-illo097: Upper Case Letters: 'I', 'J', 'V', 'X' and 'Z'

97-15th_Century-illo097: Lower Case Letters: 'j'

97-15th_Century-illo097: Punctuation: All

98-16th_Century-Albert_Durers_Prayer_Book-combined: Upper Case Letters: 'J','V',

98-16th_Century-Albert_Durers_Prayer_Book-combined: Lower Case Letters: 'j',

98-16th_Century-Albert_Durers_Prayer_Book-combined: Punctuation: All

99-16th_Century-French_Letters_Numerals-illo081: Upper Case Letters: None

99-16th_Century-French_Letters_Numerals-illo081: Lower Case Letters: 'w'

99-16th_Century-French_Letters_Numerals-illo081: Punctuation: All

Appendix IV: U. S. ASCII Sets

96-12th_Century-Bodleian_Library-illo027:

Upper Case Letters...: 12th Century - Bodleian Library, illustration: illo027.jpg

Lower Case Letters. .: set A of the 12th Century Two Small British Museum, illustration: illo023.jpg

Numerals.....: 12th Century Numerals, illustration: illo101.jpg

Punctuation.....: All synthesized

97-15th_Century-illo097:

Upper Case Letters...: 15th Century, illustration: illo097.jpg

Lower Case Letters. .: 15th Century, illustration: illo097.jpg

Numerals.....: 1470 Numbers, illustration: illo103.jpg

Punctuation.....: All synthesized

98-16th_Century-Albert_Durers_Prayer_Book-combined:

Upper Case Letters...: 16th Century - Albert Durer's Prayer Book, Upper Case, illustration: illo069.jpg

Lower Case Letters. .: 16th Century - Albert Durer's Prayer Book, Lower Case, illustration: illo071.jpg

Numerals.....: 16th Century Numerals, illustration: illo103.jpg

Punctuation.....: All synthesized

99-16th_Century-French_Letters_Numerals-illo081:

Upper Case Letters...: 16th Century - French Letters & Numerals, illustration: illo081.jpg

Lower Case Letters. .: 16th Century - French Letters & Numerals, illustration: illo081.jpg

Numerals.....: 16th Century - French Letters & Numerals, illustration: illo081.jpg

Punctuation.....: All synthesized (except period, which is in the original)

Appendix V: Linux and Windows

Glossary: Linux to Windows

Linux Speak.....Windows Equivalent (DOS command)

Command Shell (Bash here).....command.com, command.exe, or their successor.

Newline.....The character(s) which signify the end of a line of text

Path (Name).....A line of text telling the computer where to look for something.

Subdirectory.....Folder

Shell Script.....Batch File

Working Directory.....The folder where the new document is starting from.

Change Directory (cd).....Navigate to Folder (DOS: cd or chdir)

Comment (#).....Comment (DOS: REM ...)

Copy (cp).....Copy (DOS: copy)

Conditional (if ... ; then ... ; fi).....Conditional (DOS: if <condition> <command>

Loop: (for \$i in ... ; do ... ; done)....Loop (DOS: for %%i in (...) do ...)

Make a Directory (mkdir).....Make Directory (DOS: mkdir)

Remove (rm).....Delete (DOS: del)

Test ([...]).....Condition (see above), (DOS: ERRORLEVEL or EXIST only)

Ctrl-C for copy.....Press the "Control" key then the letter 'C', release both.

Ctrl-X for cut.....Press the "Control" key then the letter 'X', release both.

Ctrl-V for paste.....Press the "Control" key then the letter 'V', release both.

IMPORTANT: Please remember,

- Linux is case sensitive and Windows isn't, thus there can be issues with command and filenames from one to the other.
- Second, Linux and Windows use different line ending symbols (newlines). Linux uses a linefeed as the newline, Windows a carriage return and line feed, two symbols, for newline. Linux scripts (under Bash) will not run shell scripts with Windows line endings. Also, Windows is inconsistent in recognizing Linux newlines, some programs understand Linux newlines some don't. Worse, over time Microsoft has changed its' recognition of Linux newlines.